

AMENDMENT TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) A data storage device for performing input/output of classified data in accordance with a constant procedure, storing said classified data, and operating to store history information or update at appropriate timing said history information in accordance with progress of said constant procedure, comprising:

an interface performing external input/output of data;

a data storage portion storing said classified data;

a log storage portion storing a plurality of items of the history information relating to the input/output of said classified data; and

a control portion controlling the input/output of said classified data, wherein

each of said plurality of items of the history information includes identification information identifying said classified data, information showing a progress state of input/output processing of said classified data, and information showing a state of the input/output of said classified data,

said log storage portion is provided as a ring buffer circulatively utilizing two or more regions each storing one item of said history information,

~~each of the plurality of items of said history information stored in said log storage portion includes identification information identifying classified data to be input/output, and~~

said control portion receives the identification information identifying classified data to be input/output via said interface in accordance with start of the input/output processing of said

identified classified data, searches a plurality of regions in said log storage portion in a predetermined order, determines the region storing the earliest item of the history information stored in said log storage portion as the earliest region, and stores new history information relating to the input/output processing of said identified classified data including said received identification information in the determined earliest region, and

in input processing of said classified data including outputting of the history information, said control portion receives the identification information of said classified data to be input/output via said interface, searches the plurality of regions in said log storage portion in the predetermined order, determines the latest region storing the newest item of this history information including said received identification information, and outputs via said interface the information showing the progress state of the input/output processing of said classified data and the information showing the state of the input/output of said classified data included in the history information stored in the determined latest region.

2. (Cancelled)

3. (Previously Presented) The data storage device according to claim 1, wherein in input processing of classified data including outputting of the history information, said control portion searches the plurality of regions in said log storage portion in a predetermined sequence, determines said earliest region the latest region storing the latest history information including said received identification information, copies a part or the whole of the history information stored in the determined latest region into the determined earliest region to store the copied history information as new history information relating to the input processing

of said classified data, and outputs a part or the whole of the history information stored in said determined earliest region via said interface.

4. (Currently Amended) The data storage device according to claim ~~2 or 3~~ 1, wherein in re-output processing of said classified data including inputting of one additional item of the history information recorded in accordance with progress of said constant procedure by another device,

said control portion receives said one additional item of the history information via said interface in addition to the received identification information, determines said earliest region and said latest region, and determines whether said classified data is to output or not, based on the history information stored in the determined earliest region and said received one additional item of the history information.

5. (Currently Amended) The data storage device according to claim ~~2 or 3~~ 1, wherein in output processing of said classified data including inputting of one additional item of the history information recorded in accordance with progress of a constant procedure by another device,

said control portion receives said one additional item of the history information via said interface in addition to the received identification information, determines said earliest region and said latest region, copies a part or the whole of the history information stored in the determined latest region into the determined earliest region to store the copied history information as the new history information relating to the output processing of said classified data, and determines whether said classified data is to output or not, based on the history

information stored in said determined earliest region and said received one additional item of the history information.

6. (Previously Presented) The data storage device according to claim 1, wherein
after said earliest region is determined,

said control portion updates at appropriate times the history information stored in said determined earliest region in accordance with progress of the constant procedure before end or interruption of the constant procedure in said input/output processing.

7. (Previously Presented) The data storage device according to claim 1, wherein
each of the plurality of items of said history information further includes a management number for identifying sequence stored in said log storage portion, and

said earliest region storing the earliest item is detected based on the management numbers respectively included in two items of the history information stored in two regions arranged continuously in said log storage portion.

8. (Previously Presented) The data storage device according to claim 7, wherein
said log storage portion is formed of a ring buffer circulatively utilizing regions of N (N is a natural number larger than one) in number, and

said management number is in a residue system of M (M is a natural number satisfying $(N < M)$).

9. (Currently Amended) The data storage device according to claim 8, wherein

said control portion obtains each of the management numbers respectively included in the two items of the history information store in the two regions arranged continuously in the log storage portion, determines whether the two items of the history information respectively including said management numbers are stored continuously or not, based on a difference between the obtained [[two]] management numbers, and detects one of said two continuous regions subsequent to the other as said earliest region when the two items of the history information are discontinuously stored.